

# TRIAL TRANSCRIPT

# AUGUST 21, 2025

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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

Before The Honorable Richard Seeborg, Judge

ANIBAL RODRIGUEZ, et al.,	)	
individually and on behalf of	)	
all others similarly situated,	)	
	)	
Plaintiffs,	)	
	)	
VS.	)	<b>NO. 3:20-CV-04688 RS</b>
	)	
GOOGLE LLC,	)	
	)	
Defendant.	)	
	)	

San Francisco, California  
Thursday, August 21, 2025

**TRANSCRIPT OF JURY TRIAL PROCEEDINGS**

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CSR No. 7445, Official United States Reporter

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1           **MR. SANTACANA:** Objection, Your Honor. Outside the  
2 scope of his report.

3           **MR. MAO:** We obviously disagree, Your Honor.

4           **MR. SANTACANA:** He has not disclosed an opinion about  
5 injury to users.

6           **MR. MAO:** I think that's premature, Your Honor,  
7 because I think perhaps you should see what the slides actually  
8 say because it's well within the ambit of his report; for  
9 example, how it consumed data, how it consumed resources.

10          **THE COURT:** Why don't --

11          **MR. MAO:** Yes.

12          **THE COURT:** I will overrule the objection without  
13 prejudice. You can renew it as we get a little further along.

14          **MR. SANTACANA:** Thank you, Your Honor.

15          **BY MR. MAO:**

16          **Q.** Let's go on to Opinion Number 1.

17          First, Doctor, what exactly is an SDK? That gets thrown  
18 around a lot here. What is an SDK?

19          **A.** Sure. An SDK is a collection of computer code that helps  
20 a developer, it makes it easier for a developer to create an  
21 app because it provides some ready-made features that they can  
22 use.

23          **Q.** What role did the SDKs play in Google's collection of data  
24 in this case?

25          **A.** So the SDKs provided useful features to the app

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1 developers, which they would want to use; but the SDKs also  
2 came with Google Analytics for Firebase, which is a product  
3 within the SDK that gathers data, it takes data from the users'  
4 devices and gives that data to Google.

5 **Q.** I understand there's two different kinds of SDKs here  
6 Google released that's at issue in this case. Can you explain  
7 a little bit about these two different kinds of SDKs?

8 **A.** Sure. There's the Firebase SDK, which is -- provides a  
9 bunch of different utilities and data collection. And there's  
10 also Google Mobile Ads, which is an SDK that allows a publisher  
11 to put ads into their app. And Google Mobile Ads interfaces  
12 with a couple of Google's advertising services. One is AdMob  
13 and the other is Ad Manager.

14 **Q.** And what about the Firebase SDK in this case? Can you  
15 tell me a little bit more about that?

16 **A.** Sure. Firebase provides a number of useful features for  
17 developers. Importantly, it provides Google Analytics for  
18 Firebase, which will give some reports to app developers so  
19 they can understand how the app is being used, and -- but it  
20 also is collecting event-level data, granular data that Google  
21 saves.

22 **Q.** If we could move on to the next slide, what is a  
23 third-party app, Doctor?

24 **A.** A third-party app is an app that's not published by  
25 Google. So it could be -- well, there's Starbucks, Disney,

1 Bank of America, Reddit, *New York Times*. There's a whole bunch  
2 of third-party apps. There's, in fact, 2.3 million different  
3 apps out there.

4 **Q.** And how prevalent are the two types of Google SDKs in this  
5 case on the various apps in the various mobile phone stores?

6 **A.** So these two SDKs are very prevalent. Firebase is used in  
7 97 percent of Android apps. It's extremely prevalent in the  
8 top thousand Android apps, 97 percent. And it has presence in  
9 54 percent of the top thousand iOS apps. Those are the apps  
10 for the Apple iPhone.

11 **Q.** What about Android?

12 **A.** In Android, it's 97 percent of the top thousand apps.

13 **Q.** You said in your expert report in this case that all the  
14 class members are exposed to Google Firebase and Mobile Ads  
15 SDK. What is the basis for that opinion?

16 **A.** So the basis for the opinion is that all of these users  
17 have a Google Account and they are using a smartphone. And if  
18 you look at probability of an app being -- of the Firebase SDK  
19 being present in an app, even if you underestimate it, say it's  
20 just in 50 percent of apps -- that's a low estimate -- if you  
21 think about the average person, over the class period, which is  
22 98 months, if you use just ten apps during that period, the  
23 chance of running into this SDK is about -- is better than  
24 99.9 percent.

25 **Q.** If we move on to the next slide, what is your second

**MR. WRIGHT:** Interrogatory Number 1.

Sorry, Your Honor.

(Co-counsel confer off the record.)

**MR. MAO:** Okay. Sure.

**BY MR. MAO:**

**Q.** Doctor, have you seen this interrogatory response before?

**A.** Yes.

**Q.** Did you consider it for the purposes of rendering your technical opinion?

A. Yes, I did.

**Q.** Okay. Can you tell me a little bit about what this is in terms of the Google response? What does it describe?

**A.** Yeah. This is a schematic that describes technically how Google is taking data about third-party app activity from users' phones.

**Q.** Can we focus on the left-hand side here.

Can you explain to the jury what this Google response is telling us in terms of how the data flowed and what data was being collected?

A. Sure. The first box represents what's going on on the user's phone. So -- so through the Firebase SDK, the app interaction data generated by the user interacting with the app is going to be gathered, and it's gathered into a data bundle.

And Google -- that data bundle includes some things. It includes the event data. Okay. An event is like something

1     **Q.** And all of those events are not aggregated data; isn't  
2     that correct, Doctor?

3     **A.** No. They're collected, actually, as individual events,  
4     and they're loaded into the data bundle as individual events.

5     **Q.** Sir, I apologize. I interrupted you.

6                  Can you tell us why -- or what is happening here before it  
7     goes to that next step called consent checks? What is that?

8     **A.** Okay. So there's that sort of bold arrow. That's showing  
9     Google taking the data bundle from the user's phone. That data  
10    bundle goes across the Internet and it comes to the second box,  
11    which is one of Google's servers. That's where Google does a  
12    variety of processing on that data packet.

13                 So the first thing they do when the data packet arrives is  
14    Google makes a copy of the packet. It duplicates it. So one  
15    packet is received and then Google copies it, and now there are  
16    two packets there.

17                 After that's done, Google performs a consent check.

18     **Q.** So let me make sure I understand this.

19                 Google collects and copies the data before it checks for  
20    consent; is that correct?

21     **A.** That's right.

22     **Q.** And that is what this graph is actually showing; is that  
23    correct?

24     **A.** Yes. And it's doing this regardless of the position of  
25    the WAA and SWAA switch. The position of the switch doesn't

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1     **A.** And the data referred to there is that packet full of  
2 event data and identifiers.

3     **Q.** Can you explain the data duplication process here?

4     **A.** Yes. It's copying. The data is copied. A single copy of  
5 the data packet received from a user's mobile device is made.  
6 So one copy is made. There's an original and now there's a  
7 copy.

8     **Q.** Do you have any understanding as to why Google decided to  
9 make these copies before consent check is actually done?

10    **A.** I mean, my inference is that it's -- it's done -- they're  
11 creating a copy because that just helps them do what they're  
12 trying to do.

13    **Q.** Okay. Dr. Hochman, are there other Google Firebase  
14 products that actually checks for consent before the data is  
15 actually sent?

16    **A.** Could I just add to the prior answer?

17    **Q.** Sure. Please.

18    **A.** So, actually, the next sentence is a little bit helpful.

19       [As read] :

20           "This is done to facilitate the eventual data  
21 logging" -- okay? -- "that respects user consent  
22 choices."

23    **Q.** Okay.

24    **A.** Yes.

25    **Q.** So going back to my question, is there -- are there any

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1 that Google's got possession of.

2 **Q.** Did the WAA and sWAA technology operate as it was  
3 described -- as it was described, question mark?

4 **A.** No, according to my test, it did not operate as described.

5 **Q.** Why, in your opinion, did it not operate the way it was  
6 described?

7 **A.** Well, the fundamental issue is that the data would be  
8 taken and copied before the consent check was done. So there's  
9 no possibility of that consent check affecting whether the data  
10 would be taken and copied because Google didn't even look until  
11 after they'd already taken and copied the data.

12 **Q.** Is the data taken and copied, is it de-identified?

13 **A.** No. The data is personally identified. It's  
14 absolutely -- Google, upon receiving the data, knows who that  
15 user is.

16 **Q.** And can that data, the sWAA-off data, can that be  
17 reconnected?

18 **A.** Yes.

19 **MR. MAO:** That's all I have for direct, Your Honor.

20 **THE COURT:** Mr. Santacana?

21 **MR. SANTACANA:** Your Honor, I'm handing up  
22 Dr. Hochman's deposition transcript and expert report for your  
23 reference during the examination.

24 You got your binders? Mr. Mao, are you ready?

25 **MR. MAO:** Yes, please.

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1 argument. I'm here for the facts.

2 **Q.** You understand that Google's contention is the Web & App  
3 Activity control is a control for what is saved in the user's  
4 Google Account? You understand that's Google's contention?

5 **A.** Yes, I've heard that argument made.

6 **Q.** For purposes of your expert opinions in this case, you  
7 created your own definition of the term "Google Account," did  
8 you not?

9 **A.** Well, we should read exactly what I wrote in my expert  
10 report because I think what I said was to the effect, "This is  
11 what this means to me." When you say a "Google Account," what  
12 it means to me is all the data -- it contains all the data  
13 related to me.

14 **Q.** Okay. So just to be clear for everybody, you created a  
15 definition just for this case, for your expert report, of the  
16 phrase "Google Account"? Yes or no?

17 **A.** I don't know that I would put it that way. I would  
18 probably say it a little differently.

19 **Q.** So you did not define the term "Google Account" in your  
20 expert report? Is that your testimony?

21 **A.** Well, I think it's -- I would flip it around. What I  
22 would say -- do you want to know what I would say, or do you  
23 want to just ask questions? I don't want to start talking  
24 without --

25 **Q.** I'm listening to your answer, Dr. Hochman. I'm just also

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1 pulling up the footnote where you define it, but you can  
2 continue your answer.

3 **A.** No. I think the best thing would be for us to just read  
4 what I said. That would be the best.

5 **THE COURT:** Just answer his question. He's entitled  
6 to ask the question and you answer his question. If you can't,  
7 you tell him you can't. Answer his question.

8 **THE WITNESS:** Yeah. I mean -- now, I'm sorry. Can  
9 you reask the question?

10 **BY MR. SANTACANA:**

11 **Q.** Do you deny that you defined the phrase "Google Account"  
12 in a footnote of your expert report for this case? Do you deny  
13 that?

14 **A.** Oh, no, I'm not denying that.

15 **Q.** The definition that you gave in your expert report was,  
16 quote [as read] :

17 "The data that Google collects and saves  
18 regarding a user, including data that Google  
19 characterizes as pseudonymous."

20 That's the definition you gave, is it not?

21 **A.** That's what I said in that footnote.

22 **Q.** The definition that you created for this lawsuit is not  
23 the same as the definition that Google itself uses, is it?

24 **A.** I have to take issue with your statement. I don't agree  
25 with you.

**Q.** You don't agree with that?

A. No.

**Q.** Well, let's take a look at what you said in your deposition at page 39, lines 11 through 18.

(Video was played but not reported.)

**BY MR. SANTACANA:**

**Q.** What Google thinks "Google Account" means may be different than what you think it means. You didn't misspeak, did you?

**A.** No. I agree with that.

**Q.** Not only that, but the phrase "Google Account," as it appears on the Web & App Activity control, you admit that that is Google's use of the phrase, not your definition of the phrase. You admit that, do you not?

**A.** So if I can, just to be very clear, what I'm taking issue with in your prior question is your use of the word "definition." Okay?

Google's using the phrase and they're saying some things  
t Google Account, but they never actually anywhere provide  
ear definition of what that means and what that includes.

**Q.** Dr. Hochman, my question was quite different. So please listen.

The phrase "Google Account," as it appears on the

Web & App Activity control, Google's use of that phrase is different than yours, is it not?

**A.** Yes, Google's use of that phrase is different than mine.

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1 make clear that I'm engaged in an exercise here of trying to  
2 get to the facts. I'm trying to be thoughtful and I'm trying  
3 to consider all the information, and I'm trying not to jump to  
4 some immediate opinion without considering everything.

5 **Q.** Dr. Hochman, when you first started this case and you read  
6 the Web & App Activity description and you had used  
7 Google Analytics before, you did not form the opinion that  
8 Google should dump all of the pseudonymous Google Analytics  
9 data that it had? That was not an opinion that you formed  
10 right at the beginning, before you had started working on the  
11 case and meeting with the lawyers? Just when you read the  
12 description, that was not an opinion that you formed; right?

13 **A.** Well, of course, because I hadn't seen the data. So I  
14 didn't even know what -- you're saying the pseudonymous data,  
15 but I hadn't seen that data. I didn't know what it was.

16 **Q.** You testified that you'd never even -- it had never  
17 occurred to you, never occurred to you that Google would have  
18 pseudonymous data that's controlled by WAA. You hadn't thought  
19 about it before you joined the case?

20 **A.** Well, I think you asked that in the context of had I used  
21 the WAA and sWAA controls, was I aware of them. Yes, I was  
22 aware of them.

23 And then you asked if I had thought about how those  
24 controls intersected with Google Analytics, and I said I hadn't  
25 really thought about that because I just looked at this as,

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1 well, here's some switches and they should do what they say,  
2 and there's Google Analytics, which provides me with aggregated  
3 data. I didn't see an immediate contradiction.

4 **Q.** You did not see an immediate contradiction when you joined  
5 the case. That's exactly what you said in your deposition;  
6 right?

7 **A.** Well, it's great that I remembered it, yes.

8 **Q.** Now, this case focuses on data that's collected by  
9 analytics SDK, which is the Firebase SDK and the Google Mobile  
10 Ads SDK. Fair to say?

11 **A.** Yeah. I'll just be super precise so that no one gets  
12 confused. It's collected by Google Analytics for Firebase,  
13 which is the product within that Firebase SDK, and also in  
14 Google Mobile Ads SDK, yes.

15 **Q.** The SDKs in apps that we are talking about, they are  
16 installed by the app developer, not Google; right?

17 **A.** Correct.

18 **Q.** Google doesn't go to Reddit and say, "I'm putting this SDK  
19 in your app"?

20 **A.** All right. There's a little wrinkle. I just want to be  
21 clear. There was a time when Google pushed out an update of  
22 the SDK, one of these SDKs, and actually inserted  
23 Google Analytics for Firebase into the SDK. So just to be  
24 clear, I think I've documented that in my report.

25 **Q.** Are you giving the opinion that Google forced developers

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1 to use any of these SDKs?

2 **A.** No.

3 **Q.** Okay. Now, Google Analytics has features that are on  
4 automatically and it has features that are customized by the  
5 app developer; right?

6 **A.** That's right.

7 **Q.** Developers can choose which types of information to send  
8 to Google, can they not?

9 **A.** That's correct.

10 **Q.** There are events that are automatically collected; right?

11 **A.** Yes, that's right. They're called the default events.

12 **Q.** The default events. Earlier we saw one called first open.  
13 That's a default event; right?

14 **A.** Yes.

15 **Q.** But developers can create custom events to add on more  
16 information; right?

17 **A.** That's correct.

18 **Q.** And they do that because there might be something in the  
19 app that they want to track and understand how it's working  
20 that's not offered by Google as a default?

21 **A.** Yes, that's right. There are custom events.

22 **Q.** Developers can also choose which user parameters go along  
23 with these custom events; right?

24 **A.** Yes.

25 **Q.** Google has no role in choosing those. There's some

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1 default ones, but developers can send a lot more; right?

2 **A.** Yes. The developers can choose what data they send to  
3 Google, and Google can choose whether to accept that data and  
4 save it or not.

5 **Q.** Now, you are not aware of any evidence in this case that  
6 Google does anything to try and understand what a developer's  
7 custom event actually means? You're not aware of any such  
8 evidence; right?

9 **A.** That's right. I'm not aware of Google attempting in any  
10 way to implement safeguards against developers uploading  
11 information that's against policy.

12 **Q.** You -- let's talk about the logs that you discussed with  
13 Mr. Mao.

14 When SWAA is turned off, you concede that Google logs the  
15 app activity data in question into a non-GAIA log. You concede  
16 that; right?

17 **A.** I've said that. I don't -- yes, I've said that.

18 **Q.** And you concede that Google Analytics actually doesn't  
19 even log IP address; right?

20 **A.** Wait a second. Google Analytics is the product that  
21 displays the data to the Web developer. Do you mean  
22 Google Analytics for Firebase? If so --

23 **Q.** I do mean that.

24 **A.** Okay. I believe the IP address is sent along in the data  
25 packet. I believe we've seen it in the packet. After the data

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1   **Q.** Well, in your deposition, you didn't say, "This is very  
2 far afield." You just simply admitted -- in fact, I think you  
3 explained to me in a long monologue that this was very  
4 frustrating, but Google did it to protect user privacy. That's  
5 what you said, did you not?

6   **A.** Yes.

7   **Q.** Okay. Now, you do not believe that your use of  
8 Google Analytics has materially increased anyone's risk. You  
9 have said that; right?

10   **A.** Yes, I said that.

11   **Q.** You had tracking pixels on your own website at the time  
12 this case was filed?

13   **A.** Yes.

14   **Q.** They were on your website when we last met at your  
15 deposition?

16   **A.** Yes.

17   **Q.** And I asked you at your deposition: How can you square  
18 the plaintiffs' position in this case with the fact that you  
19 yourself were using Google Analytics on your website? You  
20 remember I asked you that?

21   **A.** Yes.

22   **Q.** And you said that you didn't believe that using  
23 Google Analytics on your website would materially increase  
24 anyone's risk. You said that?

25   **A.** Yes.

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1     **Q.** Now, after I suggested to you at your deposition that it  
2     might be a problem that you're criticizing Google Analytics on  
3     the one hand and using it on the other, you removed  
4     Google Analytics from your website, did you not?

5     **A.** Sometime later, I decided that I didn't want to share my  
6     website visitor data with Google because I was getting the idea  
7     that Google could use that data against me, and I decided not  
8     to use that.

9                 And, in fact, I've actually decided not to use a whole  
10       bunch of Google products. I've -- just for my own reasons,  
11       I've stopped using Gmail. I've stopped using Chrome. I'm  
12       using Proton Mail. I'm using the Vivaldi browser. I'm using  
13       DuckDuckGo. And I'm doing all right.

14     **Q.** You were deposed in the summer of 2023; right,  
15     Dr. Hochman?

16     **A.** Yes.

17     **Q.** You were hired for this case a couple of years earlier;  
18       right?

19     **A.** Yeah. There was -- I guess it might have been in 2022  
20       that I was hired.

21     **Q.** So for a year, you maintained Google Analytics on your  
22       website; right?

23     **A.** Yes.

24     **Q.** Then I deposed you?

25     **A.** Yes.

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1     **Q.**   Or maybe you said "huge." I don't know what word you  
2     used.

3                 How does the volume of records that you found from this  
4     natural test that had an email address in it, how does that  
5     compare to the total volume of records in the data?

6     **A.**   Oh, so it's great. I think Dr. Black actually helped me  
7     by compiling a statistic, but I think there was something  
8     like -- I don't know -- 19,000 records -- 19,000 records.

9                 There might have been just a small number that had email  
10   addresses. I think it might have been, like, maybe a few  
11   hundred records that had something -- let's just call it toxic  
12   data -- that had some of this toxic data in it.

13   **Q.**   Would you agree with me that it was a tiny proportion of  
14   data that had an email in it?

15   **A.**   Well, the only problem with it being a tiny proportion is  
16   that once it comes out in one record, then it links, and you  
17   can apply that email address to all the other records in the  
18   corpus that share an identifier with the one record that's been  
19   exposed.

20   **Q.**   Is it your testimony, Dr. Hochman, that Google takes  
21   something like this and uses it to link records to other  
22   records that are not containing information like this?

23   **A.**   Oh, the way that that would get linked is if some -- if  
24   there were a data breach and a few of the records have email  
25   addresses in them, then it's possible for the adversary to line

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1 up the records and identify which ones relate to the same user.  
2 And then if they see one email address associated with the  
3 user -- let's say the user's got a million events stored. If  
4 one of those events leaks the email address, that blows the  
5 privacy on the other -- all the other ones.

6 **Q.** I'm going to ask my question again.

7 You are not offering any evidence here that Google  
8 attempts to reidentify users when toxic data makes its way to  
9 Google?

10 **A.** I haven't said that.

11 **Q.** Now, you understand that it is against Google's rules with  
12 Google Analytics for a developer to send an email address to  
13 Google; right?

14 **A.** Oh, yes. I understand that Google has rules, and with all  
15 rules, there's some non-compliance. And this is -- I  
16 understood that this is -- we're observing non-compliance in  
17 the wild, that there are a few apps that were doing this.

18 I think one of them we observed was Career Karma, and the other  
19 one was the *Washington Post*.

20 **Q.** You are not opining in this case that Google is somehow  
21 taking advantage of the non-compliance of app developers who  
22 are sending information like this? You're not opining that;  
23 right?

24 **A.** No, I'm not saying Google's taking advantage of it. I'm  
25 just saying that this non-compliance introduces a risk into the

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1 system.

2 **Q.** You have seen no evidence that Google does anything with  
3 toxic data that happens to make its way to Google in violation  
4 of its terms; right?

5 **A.** I haven't said that. I haven't said -- I haven't asserted  
6 that, no.

7 **Q.** You have seen no such evidence?

8 **A.** Let's just repeat -- could you repeat what you said  
9 before, just because I forgot what you were saying?

10 **Q.** Sure.

11 You've seen no evidence that Google does anything to use  
12 PII, like an email address, that makes its way to  
13 Google Analytics in violation of its terms?

14 **A.** I haven't seen anything to suggest that Google's using  
15 that PII.

16 **Q.** You haven't seen anything to suggest Google is  
17 interpreting this either; right?

18 **A.** I actually wish that Google would. I wish Google would  
19 recognize that this is an email address and reject it.

20 **Q.** Can you answer my question?

21 **A.** Yeah, I haven't seen Google applying a safeguard here.

22 **Q.** You haven't seen any evidence that Google attempts to  
23 interpret this and figure out that it's an email address and  
24 whose it is; right?

25 **A.** Yeah, I haven't seen them doing that.

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1   **Q.** You also have done nothing to study how frequently this  
2   happens; right?

3   **A.** Right. I haven't done a statistical survey. This is just  
4   something -- this was like an incidental finding. We just  
5   accidentally found this happening. I think there were two  
6   sites I remember, Career Karma and *Washington Post*.

7           And then in our test app, we actually tried to do it  
8   ourselves to see if maybe it wasn't repeatable, but it was  
9   repeatable. We were also able to do the same -- cause the  
10   system to do the same behavior.

11   **Q.** So just to be totally clear with this jury, Google, by  
12   default, in Google Analytics, does not collect email addresses;  
13   right?

14   **A.** I'll just -- I want to be clear. It's in Google Analytics  
15   for Firebase, which is part of the Firebase SDK, and Google  
16   Mobile Ads SDK. Those products are not, by default, taking the  
17   email address in this form.

18   **Q.** Google's SDKs at issue in this case were not designed to  
19   collect email addresses; correct?

20   **A.** They're not the default -- they're not part of the default  
21   data that is collected.

22   **Q.** Nor does the default design result in the collection of  
23   names; right?

24   **A.** The default design is not to send the user's name, no.

25   **Q.** Nor does the default design result in the collection of

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1 phone numbers; right?

2 **A.** Correct.

3 **Q.** Addresses; right?

4 **A.** Correct.

5 **Q.** Billing information?

6 **A.** Well, as far as addresses are concerned, just the default  
7 does collect location information, which can be very  
8 identifying. But it's not collecting the user's mailing  
9 address; it's not collecting billing information, no.

10 **Q.** Okay. I want to make sure I got your testimony very clear  
11 because we're going to come back to this.

12 Your testimony is that the location information that comes  
13 with Google Analytics data is very identifying? That's your  
14 testimony under oath?

15 **A.** Yes. If you have a sequence of location information, even  
16 if it's been approximated, that sequence forms an indication  
17 of -- that can be specific to a user.

18 **Q.** Okay. I'm glad that you made that clear.

19 You mentioned that Google Analytics for Firebase somehow  
20 also involves information about the interests of users. Do you  
21 recall that?

22 **A.** Yes.

23 **Q.** You have no idea how the interest information in the data  
24 that you reviewed was generated; right?

25 **A.** Well, I wouldn't put it that way.

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1   **Q.**   It's also been used by the United States government, has  
2   it not?

3   **A.**   Yes.

4   **Q.**   In the context of discussing how to protect user privacy,  
5   the government has recommended using pseudonymous data, has it  
6   not?

7   **A.**   Yes. And, of course -- well, I'm going to summarize it  
8   really quickly for you. The devil is in the details.

9   **Q.**   Okay. A variety of states in the United States have laws  
10   that suggest the use of pseudonymous data to protect user  
11   privacy, don't they?

12   **A.**   Yes.

13   **Q.**   The Department of Health and Human Services encourages  
14   people who deal in medical records to use pseudonymous data to  
15   protect their identities, doesn't it?

16   **A.**   Well, maybe you should just show me the record because I  
17   don't remember that off the top of my head.

18   **Q.**   That's okay. I think I got it.

19                  You're not an economist; right?

20   **A.**   No.

21   **Q.**   Now, you agree with me that for Google to serve ads, it  
22   must say something to the advertiser about the fact that the ad  
23   was served; right?

24   **A.**   Yeah. Google has to at least send the advertiser a bill.

25   **Q.**   In fact, it is an industry standard that Google must

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1     **A.** Yes.

2     **Q.** You're not a hardware expert; right?

3     **A.** I have some experience in mobile hardware development and  
4 sales earlier in my career, and I am familiar enough to know  
5 how batteries work in mobile phones.

6     **Q.** You are not here testifying as a hardware expert. Am I  
7 correct about that?

8     **A.** I mean, to the extent that hardware is relevant, I  
9 understand computer hardware.

10    **Q.** Dr. Hochman, this is your expert report?

11    **A.** Yes.

12    **Q.** Anywhere in this report did you disclose any study that  
13 you did with respect to how Google Analytics for Firebase  
14 affects batteries?

15    **A.** I haven't said anything about a study in my report.

16    **Q.** I don't -- I don't understand your answer.

17       My question is: In this report, is there anything about a  
18 study that you conducted, a scientific study, any type of  
19 study, an observational study, just using your phone for a  
20 little bit and seeing how it goes, where you were quantifying  
21 the effect of Google Analytics for Firebase on batteries?

22    **A.** I haven't put that in my report. I think the issue came  
23 up in my deposition, and I think it's also been addressed in  
24 Google's responses to our technical questions.

25       **THE COURT:** It's about time for our break. How much

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1 transmission of data from those phones. Do you remember that?

2 **A.** Yes.

3 **Q.** In your report, you documented the things you did to  
4 prepare your opinions for this case; right?

5 **A.** Yes.

6 **Q.** And in that report, you did not document anything that you  
7 did to measure the degree, if any, of battery degradation  
8 caused by Google Analytics for Firebase. Am I correct about  
9 that?

10 **A.** Correct.

11 **Q.** Since you wrote this report, you have not disclosed to us  
12 any work that you have done to try and measure the degree of  
13 battery degradation, if any, caused by Google Analytics for  
14 Firebase. Am I right about that? You haven't disclosed any  
15 such measurement work; right?

16 **A.** I haven't disclosed that.

17 **Q.** The installation of Google Analytics for Firebase in an  
18 app is up to the app developer to install; right?

19 **A.** Yes.

20 **Q.** The installation of Google Mobile Ads SDK is up to the app  
21 developer to install; right?

22 **A.** Yes.

23 **Q.** The app developer decides whether and how much data to  
24 cause their app to transmit out of a phone; fair?

25 **A.** The app developer, that's an interesting question. I

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1 have -- I don't know which app developer you're talking about.  
2 It's a categorical statement. So I would just say that the app  
3 developer designs their app and it works. You know, they  
4 design it.

5 **Q.** The app developer designs the app, not Google; right?

6 **A.** Google designs the SDK.

7 **Q.** Google designs the SDK. It's up to the app developer to  
8 put it in the app; right?

9 **A.** Yep, and then Google gets the data from the SDK.

10 **Q.** And if the app developer were to choose not to install the  
11 Google Analytics SDK, then the battery degradation you were  
12 speculating about earlier wouldn't happen; right?

13 **A.** Yes.

14 **Q.** There's nothing that Google is doing to cause the battery  
15 degradation. It is the app developer who has control over  
16 whether Google Analytics for Firebase is installed. True or  
17 false?

18 **A.** Well, you've sort of said a few things together. And what  
19 I would point out is, if someone switches SWAA off, there --  
20 according to my baseline, that is the data will not be taken  
21 from their phone. If it worked according to the baseline, then  
22 their battery would work better. The user would have a control  
23 over whether that data is taken from their phone or not if it  
24 worked according to the baseline.

25 So, in fact, the user would have some control if the

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1 switch worked according to the baseline because they could say,  
2 "Stop this data transmission."

3 **Q.** Dr. Hochman, I did not ask you about sWAA or the user and  
4 how much control they have. What I asked you was whether  
5 Google has control over whether Google Analytics for Firebase  
6 is installed in any particular app.

7 **A.** The app developer chooses to install that SDK.

8 **Q.** It is outside of Google's control whether those data  
9 transmissions occur or don't occur? It's up to the developer  
10 to install the SDK; right?

11 **A.** I disagree.

12 **Q.** Okay. Well, you can talk to your counsel about why then.

13 Do you have any basis in evidence to suggest to this jury  
14 that the degree of battery degradation that you were  
15 speculating about earlier that you have done nothing to measure  
16 is anything greater than negligible?

17 **A.** I have evidence that it's greater than negligible.

18 **Q.** You have evidence. Did you disclose that evidence to us  
19 in this case?

20 **A.** Yes. It's listed in my documents considered.

21 **Q.** So do you have -- do you have it here in the courtroom?

22 **A.** Yeah. I think somewhere we've got -- it's the Google's  
23 answers to our technical questions. Google themselves raised  
24 the issue of bandwidth and battery life. When talking about  
25 the use of a hit bundle, Google said they use the hit bundle to

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1 reduce the impact on the user's device. So the fact that  
2 Google is speaking about it and thinking about it indicates  
3 that this is significant.

4 **Q.** So I think you're answering a different question than I  
5 asked, but that's helpful.

6 You understand that Google has actually designed these  
7 SDKs to minimize the impact on battery life; right?

8 **A.** At least on the Android device, I think Google can do  
9 that. I don't think that it works that way on iOS.

10 **Q.** Apple doesn't let them do that in the same way; right?

11 **A.** Whatever it is, it's not available on iOS.

12 **Q.** So Google attempts to minimize the impact on battery life.  
13 And my question is: Do you have any evidence that the impact  
14 on battery life is anything greater than negligible? Do you  
15 have evidence?

16 **A.** Well, the fact that Google worries about it is an  
17 indication that the battery life impact -- I mean, if Google is  
18 doing something to mitigate it on Android, okay. Google can't  
19 do anything to mitigate it on iOS. So let's just leave that  
20 there because that's -- that's the situation.

21 **Q.** I don't think I will leave it there, Dr. Hochman. I  
22 really do need you to answer this question. Okay? Because you  
23 spent some time speculating about batteries and bandwidth and  
24 how harmful it is, which isn't in your report. So I need you  
25 to answer the question.

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1 or did not intend to do. Am I right about that?

2 **A.** I can talk about what Google did and didn't do; and as far  
3 as intentions, I think people would have to make inferences  
4 about that.

5 **Q.** That's the jury's job, to decide what Google intended;  
6 right?

7 **A.** I think so.

8 **Q.** You're also not offering any opinion about what Google's  
9 consumers expected when they read these disclosures; right?

10 **A.** Correct.

11 **Q.** I think you talked a little bit about your personal  
12 expectations, but you're not offering an opinion about what  
13 regular people expect when they read it; right?

14 **A.** Yeah. I'm only offering an opinion about what my baseline  
15 was for testing.

16 **Q.** Now, you talked earlier about whether users have the  
17 ability to delete data that is collected when sWAA is off. Do  
18 you remember that?

19 **A.** I'm not sure. Which are you referring to?

20 **Q.** You testified earlier -- I know it's been a little while,  
21 but you testified earlier that users are not given the  
22 opportunity to delete sWAA-off data by Google. Do you remember  
23 that?

24 **A.** Oh, right, yes, because it's not there in their activity  
25 center.

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1 development kits, these SDKs we've been hearing about?

2 **A.** Yes.

3 **Q.** And those SDKs are what enables Google to take data from  
4 your apps when you're using them?

5 **A.** Right.

6 **Q.** Is that your understanding?

7 **A.** Right.

8 **Q.** And do you remember looking at Google's list that it  
9 provided and identifying which of those apps that you used?

10 **A.** Yes.

11 **Q.** All right. Let's take a look at that. It's a  
12 demonstrative slide.

13 Ready?

14 **A.** Yes. I'm sorry. I see it.

15 **Q.** No, no. We're just waiting for it to come up.

16 Could you explain to the jury what this slide is?

17 **A.** So this is a list of apps that are on my phone that have  
18 the Google SDK that collect data apparently with WAA off as  
19 well.

20 **Q.** Now, is it your understanding that Google was taking your  
21 data from each of these apps even with WAA off? Is it now your  
22 understanding?

23 **A.** Yeah.

24 **Q.** Before the lawsuit, did you know that Google was taking  
25 your data when you used all of these apps even with WAA off?

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1   **A.**   No.

2   **Q.**   How did you learn that Google was taking your data from  
3   these apps even when you had WAA off?

4   **A.**   Through our team, our experts, Mr. Hochman. He  
5   investigated a little bit further, found out that these --  
6   these apps were still taking data and providing it to Google.

7   **Q.**   And it was your data from these apps. That's what he  
8   confirmed; correct?

9   **A.**   Yes.

10   **Q.**   Now, based on just looking at these apps here, what are  
11   some things that Google would know about you that you didn't  
12   want it to know?

13   **A.**   There's quite a few here, but like things like what I ate,  
14   for instance, like McDonald's; Zillow, if I'm looking for a  
15   house; Instagram, what photos I'm looking at, what articles I'm  
16   reading, things of that nature.

17   **Q.**   Do you want Google to know everything that you're doing on  
18   these apps?

19   **A.**   No.

20   **Q.**   Why not?

21   **A.**   It's -- I just think it's really, like, creepy and weird  
22   that, like, if you think everything's okay, everything -- you  
23   know, it's like someone's looking over your shoulder at all  
24   times and -- and collecting -- or just kind of just watching  
25   you and just getting to know who you are.